

What is claimed is:

1. <sup>A cabinet having</sup> ~~An~~ over-the-top ~~type cabinet~~ door prop unit characterized in that it comprises a fitting case to be rigidly fitted to <sup>an</sup> ~~the~~ inner surface of one of the lateral walls of the cabinet, a movable spring holder vertically movable relative to the fitting case containing it and urged downward by compression springs, a link arm pivotably linked at <sup>an</sup> ~~the~~ upper end to the movable spring holder by means of a pivot pin and a swing arm swingable around an arm spindle located in a lower portion of the fitting case and having a base section <sup>surrounding</sup> ~~arranged around~~ the arm spindle and linked to the lower end of said link arm by means of a link pin and an arm section extending from ~~the~~ base section and pivotably linked at <sup>a</sup> ~~the~~ distal end thereof by means of an anchor pin to an anchor pin bearing secured to the over-the-top ~~type cabinet~~ door and that ~~the~~ pivot where the link arm and the base section of the swing arm is linked by means of the link pin is located closer to the cabinet door relative to <sup>a</sup> ~~the~~ vertical axial line connecting said pivot pin and said arm spindle when the over-the-top, <sup>during an opening motion of said door said pivot is</sup> ~~type~~ cabinet door is closed and moved onto said vertical axial line in the initial stages of the opening motion of the cabinet door and then further away from the cabinet door relative to said vertical axial line in the subsequent stages of the opening motion of the cabinet door until the cabinet door is placed on the top wall of the cabinet.

2. An over-the-top type cabinet door prop unit characterized in that it comprises a fitting case to be rigidly fitted to the inner surface of one of the lateral walls of the cabinet, a movable spring holder vertically movable relative to the fitting case containing it and urged downward by

compression springs, a link arm pivotably linked at the upper end to the movable spring holder by means of a pivot pin and a swing arm swingable around an arm spindle located in a lower portion of the fitting case and having a base section arranged around the arm spindle and linked to the lower end of said link arm by means of a link pin and an arm section extending from the base section and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the over-the-top type cabinet door, that the pivot where the link arm and the base section of the swing arm is linked by means of the link pin is located closer to the cabinet door relative to the vertical axial line connecting said pivot pin and said arm spindle when the over-the-top type cabinet door is closed and moved onto said vertical axial line in the initial stages of the opening motion of the cabinet door and then further away from the cabinet door relative to said vertical axial line in the subsequent stages of the opening motion of the cabinet door until the cabinet door is placed on the top wall of the cabinet and that said arm spindle is linked to the rotary shaft of a damper mechanism arranged in the fitting case and designed to exert a damping effect on the closing or closing and opening motion of the cabinet door by means of viscous fluid.

3. An over-the-top type cabinet door prop unit characterized in that it comprises a fitting case to be rigidly fitted to the inner surface of one of the lateral walls of the cabinet, a movable spring holder vertically movable relative to the fitting case containing it and urged downward by compression springs, a link arm pivotably linked at the upper end to the

movable spring holder by means of a pivot pin and a swing arm swingable around an arm spindle located in a lower portion of the fitting case and having a base section arranged around the arm spindle and linked to the lower end of said link arm by means of a link pin and an arm section extending from the base section and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the over-the-top type cabinet door, that the pivot where the link arm and the base section of the swing arm is linked by means of the link pin is located closer to the cabinet door relative to the vertical axial line connecting said pivot pin and said arm spindle when the over-the-top type cabinet door is closed and moved onto said vertical axial line in the initial stages of the opening motion of the cabinet door and then further away from the cabinet door relative to said vertical axial line in the subsequent stages of the opening motion of the cabinet door down to the final stages of the opening motion of the cabinet door and that a vertical slot is arranged within said movable spring holder in such a way that said downwardly urging motion of said compression springs is blocked at a limit by the fitting case and the pivotal position of the pivot pin may be lowered by a required length from the original upper pivotal position as the cabinet door is opened by hand in the final stages of the opening motion of the cabinet door until the cabinet door is placed on the top wall of the cabinet.

4. An over-the-top type cabinet door prop unit characterized in that it comprises a fitting case to be rigidly fitted to the inner surface of one of the lateral walls of the cabinet, a movable spring holder vertically

movable relative to the fitting case containing it and urged downward by compression springs, a link arm pivotably linked at the upper end to the movable spring holder by means of a pivot pin and a swing arm swingable around an arm spindle located in a lower portion of the fitting case and having a base section arranged around the arm spindle and linked to the lower end of said link arm by means of a link pin and an arm section extending from the base section and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the over-the-top type cabinet door, that the pivot where the link arm and the base section of the swing arm is linked by means of the link pin is located closer to the cabinet door relative to the vertical axial line connecting said pivot pin and said arm spindle when the over-the-top type cabinet door is closed and moved onto said vertical axial line in the initial stages of the opening motion of the cabinet door and then further away from the cabinet door relative to said vertical axial line in the subsequent stages of the opening motion of the cabinet door down to the final stages of the opening motion of the cabinet door, that a vertical slot is arranged within said movable spring holder in such a way that said downwardly urging motion of said compression springs is blocked at a limit by the fitting case and the pivotal position of the pivot pin may be lowered by a required length from the original upper pivotal position as the cabinet door is opened by hand in the final stages of the opening motion of the cabinet door until the cabinet door is placed on the top wall of the cabinet and that said arm spindle is linked to the rotary shaft of a damper mechanism arranged in the fitting case and designed to

exert a damping effect on the ~~closing~~ or closing and opening motion of the cabinet door by means of viscous fluid.

5. A pull-down-and-open type cabinet door prop unit <sup>of claim 45</sup> characterized in that it comprises a fitting case to be rigidly fitted to the inner surface of one of the lateral walls of the cabinet, a movable spring holder vertically movable relative to the fitting case containing it and urged upward by compression springs, a link arm pivotably linked at the lower end to the movable spring holder by means of a pivot pin, a swing arm swingable around an arm spindle located in an upper portion of the fitting case and having a base section arranged around the arm spindle and linked to the upper end of said link arm by means of a link pin and an arm section extending from the base section and an extension arm linked at the proximal end to the distal end of said swing arm by means of a joint pin so as to be adapted to become aligned with said arm section or pivotable therefrom toward the opening of the cabinet and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the pull-down-and-open type cabinet door and that the pivot where the link arm and the base section of the swing arm are linked by means of the link pin is located closer to the cabinet door relative to the vertical axial line connecting said pivot pin and said arm spindle <sup>when</sup> ~~and~~ the arm section <sup>and</sup> ~~when~~ the extension arm are oblique relative to each other to expand said compression springs the pull-down-and-open type cabinet door is closed, whereas said pivot is located substantially on said vertical axial line and the arm section and the extension arm are aligned as the movable spring holder is moved

downward when the cabinet door hinged to the corresponding edge of the bottom wall of the cabinet is opened and made flush with the bottom wall.

B 6. A pull-down-and-open type cabinet door prop unit <sup>of claim 15</sup> characterized in that it comprises a fitting case to be rigidly fitted to the inner surface of one of the lateral walls of the cabinet, a movable spring holder vertically movable relative to the fitting case containing it and urged upward by compression springs, a link arm pivotably linked at the lower end to the movable spring holder by means of a pivot pin, a swing arm swingable around an arm spindle located in an upper portion of the fitting case and having a base section arranged around the arm spindle and linked to the upper end of said link arm by means of a link pin and an arm section extending from the base section and an extension arm linked at the proximal end to the distal end of said swing arm by means of a joint pin so as to be adapted to become aligned with said arm section or pivotable therefrom toward the opening of the cabinet and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the pull-down-and-open type cabinet door, that the pivot where the link arm and the base section of the swing arm are linked by means of the link pin is located closer to the cabinet door relative to the vertical axial line connecting said pivot pin and said arm spindle and the arm section when the extension arm are oblique relative to each other to expand said compression springs and the pull-down-and-open type cabinet door is closed, whereas said pivot is located substantially on said vertical axial line and the arm section and

the extension arm are aligned as the movable spring holder is moved downward when the cabinet door hinged to the corresponding edge of the bottom wall of the cabinet is opened and made flush with the bottom wall and that said arm spindle is linked to the rotary shaft of a damper mechanism arranged in the fitting case and designed to exert a damping effect on the closing or closing and opening motion of the cabinet door by means of viscous fluid.

7. A pull-up-and-open type top cabinet door prop unit <sup>of claim 15</sup> characterized in that it comprises a fitting case to be rigidly fitted to the inner surface of one of the lateral walls of the cabinet, a movable spring holder horizontally movable relative to the fitting case containing it and urged toward the front wall of the cabinet by compression springs, a link arm pivotably linked at the end close to the rear wall of the cabinet to the movable spring holder by means of a pivot pin, a swing arm swingable around an arm spindle located in a portion of the fitting case close to the front wall of the cabinet and having a base section arranged around the arm spindle and linked to the end of said link arm close to the front wall of the cabinet by means of a link pin and an arm section extending from the base section and an extension arm linked at the proximal end to the distal end of said swing arm by means of a joint pin so as to be adapted to become aligned with said arm section or pivotable therefrom toward the opening of the cabinet and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the pull-up-and-open type top cabinet door and that the pivot where the link arm and the base section of the swing arm is linked by means of the link

pin is located between the pivot pin and the arm spindle and slightly away from the cabinet door relative to the horizontal axial line connecting said pivot pin and said arm spindle when the arm section and the extension arm are oblique relative to each other to compress said compression springs and the pull-up-and-open type top cabinet door is closed, whereas said pivot is located closer to the front wall of the cabinet relative to the arm spindle and away from the cabinet door relative to the horizontal axial line connecting said pivot pin and said arm spindle and the arm section and the extension arm are aligned and project upward to expand said compression springs as the movable spring holder is moved away from the cabinet door relative to said horizontal axial line when the pull-up-and-open type top cabinet door hinged to the upper edge of the rear wall of the cabinet is opened.

8. A pull-up-and-open type top cabinet door prop unit<sup>of claim 15</sup> characterized in that it comprises a fitting case to be rigidly fitted to the inner surface of one of the lateral walls of the cabinet, a movable spring holder horizontally movable relative to the fitting case containing it and urged toward the front wall of the cabinet by compression springs, a link arm pivotably linked at the end close to the rear wall of the cabinet to the movable spring holder by means of a pivot pin, a swing arm swingable around an arm spindle located in a portion of the fitting case close to the front wall of the cabinet and having a base section arranged around the arm spindle and linked to the end of said link arm close to the front wall of the cabinet by means of a link pin and an arm section extending from the base section and an extension arm linked at the proximal end to the



distal end of said swing arm by means of a joint pin so as to be adapted to become aligned with said arm section or pivotable therefrom toward the opening of the cabinet and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the pull-up-and-open type top cabinet door, that the pivot where the link arm and the base section of the swing arm is linked by means of the link pin is located between the pivot pin and the arm spindle and slightly away from the cabinet door relative to the horizontal axial line connecting said pivot pin and said arm spindle when the arm section and the extension arm are oblique relative to each other to compress said compression springs and the pull-up-and-open type top cabinet door is closed, whereas said pivot is located closer to the front wall of the cabinet relative to the arm spindle and away from the cabinet door relative to the horizontal axial line connecting said pivot pin and said arm spindle and the arm section and the extension arm are aligned and project upward to expand said compression springs as the movable spring holder is moved away from the cabinet door relative to said horizontal axial line when the pull-up-and-open type top cabinet door hinged to the upper edge of the rear wall of the cabinet is opened and that said arm spindle is linked to the rotary shaft of a damper mechanism arranged in the fitting case and designed to exert a damping effect on the closing or closing and opening motion of the cabinet door by means of viscous fluid.

B 9. A pull-up-and-open type cabinet door prop unit <sup>of claim 15</sup> characterized in that it comprises a fitting case to be rigidly fitted to the inner surface of one of the lateral walls of the cabinet, a movable spring

holder vertically movable relative to the fitting case containing it and urged downward by compression springs, a link arm pivotably linked at the upper end to the movable spring holder by means of a pivot pin, a swing arm swingable around an arm spindle located in a lower portion of the fitting case and having a base section arranged around the arm spindle and linked to the lower end of said link arm by means of a link pin and an arm section extending from the base section and an extension arm linked at the proximal end to the distal end of said swing arm by means of a joint pin so as to be adapted to become aligned with said arm section or pivotable therefrom toward the opening of the cabinet and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the pull-up-and-open type cabinet door and that the pivot where the link arm and the base section of the swing arm are linked by means of the link pin is located closer to the cabinet door relative to the vertical axial line connecting said pivot pin and said arm spindle when the arm section and the extension arm are oblique relative to each other to compress said compression springs and the pull-up-and-open type cabinet door is closed, whereas said pivot is moved substantially onto said vertical axial line connecting said pivot pin and said arm spindle in the initial stages of opening the cabinet door hinged to the corresponding upper edge of the top wall and then further away from the cabinet door relative to said vertical axial line in the subsequent stages of opening the cabinet door until the arm section and the extension arm are aligned to expand the compression spring and complete the door opening operation.

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10. A pull-up-and-open type cabinet door prop unit <sup>Of Claim 15</sup> characterized in that it comprises a fitting case to be rigidly fitted to the inner surface of one of the lateral walls of the cabinet, a movable spring holder vertically movable relative to the fitting case containing it and urged downward by compression springs, a link arm pivotably linked at the upper end to the movable spring holder by means of a pivot pin, a swing arm swingable around an arm spindle located in a lower portion of the fitting case and having a base section arranged around the arm spindle and linked to the lower end of said link arm by means of a link pin and an arm section extending from the base section and an extension arm linked at the proximal end to the distal end of said swing arm by means of a joint pin so as to be adapted to become aligned with said arm section or pivotable therefrom toward the opening of the cabinet and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the pull-up-and-open type cabinet door, that the pivot where the link arm and the base section of the swing arm are linked by means of the link pin is located closer to the cabinet door relative to the vertical axial line connecting said pivot pin and said arm spindle when the arm section and the extension arm are oblique relative to each other to compress said compression springs and the pull-up-and-open type cabinet door is closed, whereas said pivot is moved substantially onto said vertical axial line connecting said pivot pin and said arm spindle in the initial stages of opening the cabinet door hinged to the corresponding upper edge of the top wall and then further away from the cabinet door relative to said vertical axial line in the

subsequent stages of opening the cabinet door until the arm section and the extension arm are aligned to expand the compression spring and complete the door opening operation and that said arm spindle is linked to the rotary shaft of a damper mechanism arranged in the fitting case and designed to exert a damping effect on the closing or closing and opening motion of the cabinet door by means of viscous fluid.

11. A pull-sideways-and-open type cabinet door prop unit characterized in that it comprises a fitting case to be rigidly fitted to the inner surface of either the top wall of the bottom wall of the cabinet, a movable spring holder horizontally movable relative to the fitting case containing it and urged toward the front wall of the cabinet door by compression springs, a link arm pivotably linked at the end close to the rear wall of the cabinet to the movable spring holder by means of a pivot pin, a swing arm swingable around an arm spindle located in a portion of the fitting case close to the front wall of the cabinet and having a base section arranged around the spindle and linked to the end of said link arm close to the front wall of the cabinet by arm means of a link pin and an arm section extending from the base section and an extension arm linked at the proximal end to the distal end of said swing arm by means of a joint pin so as to be adapted to become aligned with said arm section or pivotable therefrom toward the opening of the cabinet and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the pull-sideways-and-open type cabinet door and that the pivot where the link arm and the base section of the swing arm are linked by means of the link pin is located closer to the cabinet door

of claim 15

relative to the horizontal axial line connecting said pivot pin and said arm spindle when the arm section and the extension arm are oblique relative to each other to expand said compression springs and the pull-sideways-and-open type cabinet door is closed, whereas said pivot is moved substantially onto said horizontal axial line connecting said pivot pin and said arm spindle in the initial stages of opening the cabinet door hinged to the corresponding upper edge of the op wall to compress said compression springs and then further away from the cabinet door relative to said horizontal axial line in the subsequent stages of opening the cabinet door until the arm section and the extension arm are aligned to expand the expand spring and complete the door opening operation.

12. A pull-sideways-and-open type cabinet door prop unit <sup>of claim 15</sup> characterized in that it comprises a fitting case to be rigidly fitted to the inner surface of either the top wall or the bottom wall of the cabinet, a movable spring holder horizontally movable relative to the fitting case containing it and urged toward the front wall of the cabinet door by compression springs, a link arm pivotably linked at the end close to the rear wall of the cabinet to the movable spring holder by means of a pivot pin, a swing arm swingable around an arm spindle located in a portion of the fitting case close to the front wall of the cabinet and having a base section arranged around the arm spindle and linked to the end of said link arm close to the front wall of the cabinet by means of a link pin and an arm section extending from the base section and an extension arm linked at the proximal end to the distal end of said swing arm by means of a joint pin so as to be adapted to become aligned with said arm section or

pivotable therefrom toward the opening of the cabinet and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the pull-sideways-and-open type cabinet door, that the pivot where the link arm and the base section of the swing arm are linked by means of the link pin is located closer to the cabinet door relative to the horizontal axial line connecting said pivot pin and said arm spindle when the arm section and the extension arm are oblique relative to each other to expand said compression springs and the pull-sideways-and-open type cabinet door is closed, whereas said pivot is moved substantially onto said horizontal axial line connecting said pivot pin and said arm spindle in the initial stages of opening the cabinet door hinged to the corresponding upper edge of the top wall to compress said compression springs and then further away from the cabinet door relative to said horizontal axial line in the subsequent stages of opening the cabinet door until the arm section and the extension arm are aligned to expand the expand spring and complete the door opening operation and that said arm spindle is linked to the rotary shaft of a damper mechanism arranged in the fitting case and designed to exert a damping effect on the closing or closing and opening motion of the cabinet door by means of viscous fluid.

B 13. A pull-up-and-store-under-the-top type cabinet door prop<sup>n</sup> unit designed for the cabinet door to be pulled up to a horizontal position, pushed into the cabinet and stored under the top wall of the cabinet by means of a bracket horizontally movable along a sliding rail assembly arranged on the inner surface of one of the lateral walls of the cabinet

Of Claim 15

and pivotably linked by means of a sliding hinge mechanism to the inner surface of a top portion of the cabinet door fitted into the opening of the cabinet, characterized in that it comprises a fitting case to be rigidly fitted to said bracket, a spring holder vertically movable relative to the fitting case containing it and urged downward by compression springs, a link arm pivotably linked at the upper end to the movable spring holder by means of a pivot pin, a swing arm swingable around an arm spindle located in a lower portion of the fitting case and having a base section arranged around the arm spindle and linked to the lower end of said link arm by means of a link pin and an arm section extending from the base section and an extension arm linked at the proximal end to the distal end of said swing arm by means of a joint pin so as to be adapted to become aligned with said arm section or pivotable therefrom toward the opening of the cabinet and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the pull-up-and-store-under-the-top type cabinet door and that the pivot where the link arm and the base section of the swing arm are linked by means of the link pin is located closer to the cabinet door relative to the vertical axial line connecting said pivot pin and said arm spindle when the arm section and the extension arm are oblique relative to each other, whereas said pivot is moved substantially onto said vertical axial line in the initial stages of opening the cabinet door linked to the bracket by way of the sliding hinge mechanism and then further away from the cabinet door relative to said vertical axial line in the subsequent stages of opening the cabinet door until the arm section and the extension arm are aligned to expand

B the compression spring and complete the door opening operation.

14. A pull-up-and-store-under-the-top type cabinet door prop<sup>of claim 15</sup> unit designed for the cabinet door to be pulled up to a horizontal position, pushed into the cabinet and stored under the top wall of the cabinet by means of a bracket horizontally movable along a sliding rail assembly arranged on the inner surface of one of the lateral walls of the cabinet and pivotably linked by means of a sliding hinge mechanism to the inner surface of a top portion of the cabinet door fitted into the opening of the cabinet, characterized in that it comprises a fitting case to be rigidly fitted to said bracket, a spring holder vertically movable relative to the fitting case containing it and urged downward by compression springs, a link arm pivotably linked at the upper end to the movable spring holder by means of a pivot pin, a swing arm swingable around an arm spindle located in a lower portion of the fitting case and having a base section arranged around the arm spindle and linked to the lower end of said link arm by means of a link pin and an arm section extending from the base section and an extension arm linked at the proximal end to the distal end of said swing arm by means of a joint pin so as to be adapted to become aligned with said arm section or pivotable therefrom toward the opening of the cabinet and pivotably linked at the distal end thereof by means of an anchor pin to an anchor pin bearing secured to the pull-up-and-store-under-the-top type cabinet door, that the pivot where the link arm and the base section of the swing arm are linked by means of the link pin is located closer to the cabinet door relative to the vertical axial line connecting said pivot pin and said arm spindle when the arm section and



the extension arm are oblique relative to each other, whereas said pivot is moved substantially onto said vertical axial line in the initial stages of opening the cabinet door linked to the bracket by way of the sliding hinge mechanism and then further away from the cabinet door relative to said vertical axial line in the subsequent stages of opening the cabinet door until the arm section and the extension arm are aligned to expand the compression spring and complete the door opening operation and that said arm spindle is linked to the rotary shaft of a damper mechanism arranged in the fitting case and designed to exert a damping effect on the closing or closing and opening motion of the cabinet door by means of viscous fluid.

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